



# First record of albinism in Veronicellidae (Mollusca, Gastropoda)

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**KEY WORDS:** Albinism; Veronicellidae, Gastropoda, Mollusca, Porto Alegre, *Phyllocaulis soleiformis*.

**ABSTRACT** The albinism on slugs and snails has been registered since the last century. The first record of albinism for Veronicellidae (Gastropoda) slugs are made, conclusively for the species *Phyllocaulis soleiformis* (Orbigny, 1835), from a rearing in the Laboratory (lot n° MCP-06579), Porto Alegre, RS, Brazil.

**RIASSUNTO** L'albinismo in lumache e chioccioline è stato registrato dal secolo scorso. Si fa il primo registro di albinismo per lumache della famiglia Veronicellidae (Gastropoda), comprovatamente per la specie *Phyllocaulis soleiformis* (Orbigny, 1835), allevata in Laboratorio (lotto n° MCP-06579) di Porto Alegre, RS, Brasile.

**RESUMO** O albinismo em lesmas e caracóis tem sido registrado desde o século passado. Faz-se o primeiro registro de albinismo para lesmas da família Veronicellidae (Gastropoda), comprovadamente para a espécie *Phyllocaulis soleiformis* (Orbigny, 1835), criada em Laboratório (lote n° MCP-06579) de Porto Alegre, RS, Brasil.

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## INTRODUCTION

Albinism is a phenotypic expression of a recessive homozygote genotype. This anomaly has been regularly observed in mollusks (terrestrial European snails and slugs) since the last century. HESSE (1878), commenting this phenomenon and its records, speculated on the possibility of the same one to be "hereditary", but he agrees that this lack of pigmentation certainly depends on the climate, such as low temperatures, humidity and cloudiness. As in these days records of albino mollusks were limited to places with these features. FISCHER (1880) reporting on a case of albinism in *Limax maximus* Linneus, 1758, a slug of the family Limacidae, gave only a description of its external morphology. HONIGMANN (1908) confirmed the heritability of albinism in terrestrial gastropods by rearing some species in the laboratory up to the fourth generation. In Brazil, PARAENSE (1955) and PARAENSE & DESLANDES (1955a) recently observed albinism in *Australorbis glabratus* (Brumt, 1941) and *A. nigricans* (Spix, 1827) which belong to the family Planorbidae. PARAENSE & DESLANDES (1955b) use the albinism for the almost cryptic evidence of the independence of these two species, by self-fertilization followed by cross-fertilization. BACKELJAU *et Al.* (1997) determined four albino specimens of the subgenus *Carinarion* as *Arion circumscriptus* Johnston, 1828 (Arionidae) by the analysis of the external and internal morphology. This result was confirmed by electrophoretic analysis of the protein profile of the albumin gland (AGP). BACKELJAU *et Al.* (1997) also emphasized the importance to discuss the morphometric analysis together with environmental data, which influence the coloration of the species.

We have not found any record of albinism in slugs of the family Veronicellidae. In 1985, Urubatã Estivalet Gomes, student of

the coordinator of this work, found some albino slugs of the family Veronicellidae in a district of Camaquã, RS, determined as *Phyllocaulis soleiformis* (d'Orbigny, 1835). These animals died a few weeks after being taken to the laboratory of the Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, RS. In July 1988 the coordinator of this work had the opportunity to observe a rearing of albino slugs, kept by Rafael Caballero in the "Escuela Agrícola Panamericana", in Zamorano, Honduras. After dissection of an adult specimen of this rearing, it was determined as *Sarasinula dubia* (Semper, 1885). This offspring also could not be kept alive.

## MATERIAL AND METHODS

The malacological laboratory of the Faculty of Biociências of the PUCRS received an albino specimen of Veronicellidae at the end of 1996, collected in Porto Alegre, RS. This specimen egged 7 eggs on 29<sup>th</sup> of December 1996 and died some days later. After an incubation period of 19 days 5 albino specimens hatched from these 7 eggs and of these 3 survived. One year later in January of 1998, it was decided to isolate the larger individual from the two smaller ones. In the box where the two smaller specimens (fig. 1) were kept two batches of eggs were found, one consisting of 7 eggs on 25.02.1998 and the other one with 6 eggs on 04.03.1998. There was no hatching of both eggings. The larger, isolated specimen (fig. 2) did not egg.

## RESULTS AND CONCLUSION

When the albino specimens completed 21 months of life without new eggging, the greater one was sacrificed to determine its degree of maturity and to proceed the anatomical determination

of the species. It was an adult specimen, catalogued under n. MCP-06579 in the collection of the Museu de Ciências e Tecnologia, PUCRS, Porto Alegre.

The external morphometric data gained from the examination of the albino specimen were similar to the averages cited by BERTSCHINGER & THOMÉ (1987) for *Phyllocaulis soleiformis*. There was only a small discrepancy in the distance between the female genital pore and the pedal ridge (1,7mm in comparison to 1,2 mm found by BERTSCHINGER & THOMÉ (1987).

THOMÉ (1976) described the notum of *Phyllocaulis soleiformis* as being of clear-brown colours with a strong black pigmentation in form of points and irregular spots which are found all over the surface. However, there are two longitudinal stripes, without black pigmentation, delimiting a rhombic median area from the two laterally areas of same width. The hyponota and the sole of the foot are free of any pigmentation. In all the albino specimens recorded up to now, all external surfaces are unpigmented.

The morpho-anatomical data, obtained by the dissection of the albino specimen, i.e. the pedal gland, the penis, the penial gland, and the region of the bursa copulatrix (= gametolytic gland) presented features and measures also comparable to those cited in BERTSCHINGER & THOMÉ (1987) for *Phyllocaulis soleiformis*.

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## REFERENCES

- BACKELJAU T., JORDAENS K., DE WOLF H., RODRIGUEZ T. & WINPENNINGCKX B., 1997. Albino-like *Carinarion* identified by protein electrophoresis (Pulmonata, Arionidae). *Journal of Molluscan Study*, London, 63: 559-563.
- BERTSCHINGER R.B.E. & THOMÉ J.W., 1987. Contribuição à recaracterização de *Phyllocaulis soleiformis* (d'Orbigny, 1835) (Gastropoda, Veronicellidae). *Revista Brasileira de Zoologia*, São Paulo, 4(3): 215-233.
- FISCHER P., 1880. Cas d'albinisme chez le *Limax maximus*. *Journal de Conchyliologie*, Paris, 28(3): 299-300.
- HESSE P., 1878. Zum Albinismus der Mollusken. *Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft*, Frankfurt a. M., 10: 70-71.
- HONIGMANN H., 1908. Beiträge zur Kenntnis des Albinismus bei Schnecken. III. *Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft*, Frankfurt a. M., 40: 38-39.
- PARAENSE L.W., 1955. Autofecundação e fecundação cruzada em *Australorbis glabratus*. *Memórias do Instituto Oswaldo Cruz*, Rio de Janeiro, 53(2/4): 277-284.
- PARAENSE L.W. & DESLANDES M., 1955a. Studies on *Australorbis centimetralis*. *Revista Brasileira de Biologia*, Rio de Janeiro, 15(4): 341-348.
- PARAENSE L.W. & DESLANDES M. 1955b. Isolamento reprodutivo entre *Australorbis glabratus* e *A. nigricans*. *Memórias do Instituto Oswaldo Cruz*, Rio de Janeiro, 53(2/4): 321-324.

THOMÉ J.W., 1976. Revisão do gênero *Phyllocaulis* Colosi, 1922 (Mollusca, Veronicellidae). *Iberingia*, Porto Alegre, ser. Zool., (49): 67-90.



Fig. 1. *Phyllocaulis soleiformis*: normal specimen, together with the two minor albinos [scale in cm].



Fig. 2. *Phyllocaulis soleiformis*: normal specimen, together with the larger albino (the relaxed condition allows to observe the total lack of pigmentation also on the ventral side of the albino) [scale in cm].